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CLINICAL AND BIOCHEMICAL PECULIARITIES  
OF THE COURSE OF DYSENTERY IN CHILDREN  
TREATED WITH POLYMYXIN 'M' AND  
MONOMYCIN

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Foreign Technology Division  
Wright-Patterson Air Force Base, Ohio

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# U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<i>А а</i>	A, a	Р р	<i>Р р</i>	R, r
Б б	<i>Б б</i>	B, b	С с	<i>С с</i>	S, s
В в	<i>В в</i>	V, v	Т т	<i>Т т</i>	T, t
Г г	<i>Г г</i>	G, g	У у	<i>У у</i>	U, u
Д д	<i>Д д</i>	D, d	Ф ф	<i>Ф ф</i>	F, f
Е е	<i>Е е</i>	Ye, ye; E, e*	Х х	<i>Х х</i>	Kh, kh
Ж ж	<i>Ж ж</i>	Zh, zh	Ц ц	<i>Ц ц</i>	Ts, ts
З з	<i>З з</i>	Z, z	Ч ч	<i>Ч ч</i>	Ch, ch
И и	<i>И и</i>	I, i	Ш ш	<i>Ш ш</i>	Sh, sh
Й й	<i>Й й</i>	Y, y	Щ щ	<i>Щ щ</i>	Shch, shch
К к	<i>К к</i>	K, k	Ъ ъ	<i>Ъ ъ</i>	"
Л л	<i>Л л</i>	L, l	Ы ы	<i>Ы ы</i>	Y, y
М м	<i>М м</i>	M, m	Ь ь	<i>Ь ь</i>	'
Н н	<i>Н н</i>	N, n	Э э	<i>Э э</i>	E, e
О о	<i>О о</i>	O, o	Ю ю	<i>Ю ю</i>	Yu, yu
П п	<i>П п</i>	P, p	Я я	<i>Я я</i>	Ya, ya

\* ye initially, after vowels, and after ъ, ѣ; e elsewhere.  
When written as ѣ in Russian, transliterate as ye or ѣ.  
The use of disacritical marks is preferred, but such marks  
may be omitted when expediency dictates.

CLINICAL AND BIOCHEMICAL PECULIARITIES  
OF THE COURSE OF DYSENTERY IN  
CHILDREN TREATED WITH POLYMYXIN "M"  
AND MONOMYCIN<sup>1</sup>

V. P. Zubareva

(Scientific Supervision by  
Professor A. L. Libov)

The application of new antibiotics during acute bacterial dysentery is connected with inadequate effectiveness in many patients of antibiotics which are widely used in clinical practice.

Study of the clinical course of dysentery in children treated with polymyxin "M" and monomycin with simultaneous investigation of alterations in the protein composition of the serum was carried out with 80 children suffering from acute bacterial dysentery. The predominate form was acute Sonne dysentery (73), while 4 had the Flexner form and 3, the Newcastle form.

The bulk of the patients under observation were children in the first two years of life. The premorbid background in many of children was complicated. Sixty-four were on artificial and

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<sup>1</sup>Russian term used for paromomycin - Translator.

mixed feeding. Fifty-four children showed phenomena of rickets and its residual manifestations; 18 showed hypertrophy of the first degree and 2, hypertrophy of the second degree; 27 suffered phenomena of exudative diathesis. Premature birth was noted in the anamnesis of 8 patients. Almost all of the children (72) had in the past suffered one or another disease, and many had histories of several illnesses. Two-thirds of the patients showed diarrhea of various type in their histories. The majority of the children had a number of accompanying diseases: catarrh of the upper respiratory track - 18; catarrhal otitis - 6; pneumonia - 8; otitis and pneumonia - 4; nasopharyngitis - 6; hypochromic anemia - 17, and pyoderma, 1 child. All the children had been in contact with patients with acute dysentery.

For the most part hospitalization occurred in the early period of the disease. The moderately severe form of the disease was found in almost half the children which we observed (32), while 48 had a light form.

The children with the moderately severe form of the disease were divided into two subgroups according to the clinical characteristics of the disease and the disturbances in the serum protein composition.

In children of the first subgroup (22 individuals) the disease occurred with mildly expressed symptoms of intoxication, but with substantial changes on the part of intestinal symptoms: liquid stool up to 10-15 times in 24 hours, virtually without fecal masses, turbid mucus, sometimes with fibers of blood, tenesmus, yielding [prolapse ?] of the anus, and splanchnodynia. As a rule, in the first days the sigma [sigmoid flexure ?] of the patient is spastic and morbid. The coprogram contains mucus, leukocytes, and erythrocytes. The serum showed hypoproteinemia (4.8%-5.6%), a reduction in albumins (33.4%-42.1%), and an increase in  $\alpha$ -globulin fractions ( $\alpha_1$ , 8.1%;  $\alpha_2$ , 13.4%-14.0%). The

$\beta$ -globulins frequently remained normal; sometimes a slight increase was noted. The  $\alpha$ -globulin coefficient (normal 1.3-2-3 per Todorov) varied within the limits 0.73-1.06. In these children the stool was normalized with 2-4 days of treatment with polymixin "M" and with monomycin. The coprogram was normalized at the end of the first and beginning of the second week of illness. When the patients were discharged from the hospital, on the 30-45th day of the illness, the changes in the proteinogram were virtually normalized. In the first week of treatment the seeding of the agent was terminated [possibly marked end of ability to grow cultures ? - Translator].

In the second group of children ill with a moderately severe form of dysentery the disease began with a sharp rise in temperature, with frequent vomiting and moderate phenomena of intestinal toxicosis. The stool was liquid or pasty up to 4-6 times per day with mucus; there were sometimes filaments of blood and the sigmoid flexure was spastic.

The changes in the proteinogram were the same as in the preceding group, but in contrast to that group the stool was not normalized for a prolonged period; it was sometimes necessary to carry out a repeated course of treatment with the antibiotics in combination with stimulating therapy. Normalization of coprograms began in the third week of illness. Despite expressed sensitivity to monomycin and polymixin "M" of the isolated dysentery bacillus, excretion of bacteria did not cease.

Hypoproteinemia, hypogammaglobulinemia, and hypoalbuminemia remained in the period of abatement of clinical symptoms and even 40-55 days from the beginning of the disease. In children with a mild form of the disease (48) the beginning of the illness was gradual. The acute form of the illness was manifested mainly through intestinal symptoms in the form of liquid stool 3-5 times per day, with mucus. The coprogram contained mucus and leukocytes. General suffering was not great.

Disturbance of health was expressed in a brief rise in temperature to 37.8°, with loss of appetite.

Total serum protein oscillated on the lower boundaries of normal (6.1 g%-6.2 g%), showing a tendency toward rapid growth in the period of recovery to 7.15 g%-7.22 g%. Albumins were reduced to 48%-50% due to the increase in globulins -  $\alpha_1$ , 5.4%;  $\alpha_2$ , 12.8%. The  $\gamma$ -globulins showed a drop of no more than 2.3-2.8%. In the recovery period the foregram [transliterated Russian term; no translation found - Translator] of the blood serum protein fractions took on a normal character.

The  $\alpha_2/\gamma$  globulin coefficient was frequently elevated - 1.2 (normal 0.71, per Mgedlishvili).

#### Conclusions

Disturbances in the protein composition of the serum are observed in all periods of the disease process; they proceed in parallel with the severity of the illness, intensifying during moderately severe forms. They have a less expressed change in mild forms and they weaken under the influence of treatment with polymixin "M" and monomycin quite rapidly, although during moderately severe forms of the disease total restoration does not set in for the majority of patients up to their release from the hospital.

Hypoglobulinemia observed in the majority of patients was caused by elevation of the  $\alpha_1$  and  $\alpha_2$  globulins; increase in  $\beta$  was less frequent. The  $\gamma$ -globulins were reduced.

The ratio of the  $\alpha_2$  and  $\gamma$  globulins reflects both the nature of the course of dysentery and the effect of treatment. A rapid reduction in this ratio to normal indicates a favorable clinical course of the disease.